

**REMARKS**

Claims 1, 3, 5-11, 14-19 and 21-26 are pending in the present application. Claims 1 and 21 are herein amended. New claim 26 has been added. No new matter has been presented.

**Claim Rejections - 35 U.S.C. § 112**

Claims 21-25 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The Office Action stated that the Application does not describe a polyoxyethylene monoalkylether surfactant having a linear chain structure. Claim 21 has been amended to remove this limitation.

Withdrawal of the § 112 rejection is requested.

**Claim Rejections - 35 U.S.C. § 103**

Claims 1, 3, 5, 6, 8-11, 14, 15, 18 and 19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over **Kanda** (EP 1152036) in view of **Mouri** (US 2002/0012035); claim 7 was rejected under 35 U.S.C. § 103(a) as being unpatentable over **Kanda** in view of **Mouri**, and further in view of **Suzuki** (US 6,043,145); and claims 16 and 17 were rejected under 35 U.S.C. § 103(a) as being unpatentable over **Kanda** in view of **Mouri**, and further in view of **Takahashi** (US 6,537,719) and **Tanaka** (US 6,555,617).

Favorable reconsideration is requested.

Applicants respectfully submit that Kanda in view of Mouri does not teach or suggest:

wherein the opening dimension D (nm) of the resist pattern, and an average opening dimension Dav. (nm) of the smoothed resist pattern whose wall surfaces have been smoothed satisfy the relation expressed by:

$Dav. (nm) \geq D (nm) \times (90/100).$

as recited in claim 1, and similarly recited in claims 21 and 26.

Kanda (EP 1152036) discloses that the degrees of reduction in size are determined according to the following equation: Degree of reduction in size (%) = [(size before formation of the insolubilized layer) – (size after formation of the insolubilized layer)] / (size before formation of the insolubilized layer)  $\times$  100.

The object of the invention described in Kanda is to provide a water-soluble resin composition which can be used in a pattern-forming method, wherein the composition is coated on resist patterns formed in a conventional method and the resulting coating layer is crosslinked for thickening the resist patterns thereby effectively fining the trench patterns or hole patterns under the resolution limit.

Therefore, size after formation of the insolubilized layer is preferably smaller (degree of reduction in size (%) is preferably higher), and the degrees of reduction in size (%) in Example 2 of Kanda are 43.6 % and 51.0 %. (Table 1.) Thus, in Kanda, the water-soluble resin composition is coated on resist patterns and the resulting coating layer is crosslinked so that the size after formation of the insolubilized layer is about half of the size before formation of the insolubilized layer.

On the other hand, in the present application, the edge roughness of the resist pattern is reduced without great deformation of the resist pattern or variations in the size thereof. In the present application, it is possible to keep the amount of variation in the pattern size to within a range of  $\pm 10\%$  (*i.e.*,  $\text{Dav. (nm)} \geq \text{D (nm)} \times (90/100)$  is satisfied) so that a high-performance semiconductor device having a highly detailed pattern is obtained. The phrase “the amount of

variation in the pattern size is within a range of  $\pm 10\%$  (*i.e.*,  $\text{Dav. (nm)} \geq \text{D (nm)} \times (90/100)$  is satisfied)” in the present application means that the degrees of reduction in size (%) are within a range of  $\pm 10\%$ .

Kanda does not disclose that the amount of variation in the pattern size is within a range of  $\pm 10\%$  (*i.e.*,  $\text{Dav. (nm)} \geq \text{D (nm)} \times (90/100)$  is satisfied).

### **Double Patenting Rejection**

Claims 1, 3, 5-11, 14-19, 21-25 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-21 of copending Application No. 10/290,493.

Applicants will address the provisional rejection once all other rejections have been withdrawn.

For at least the foregoing reasons, claims 1, 3, 5-11, 14-19 and 21-26 are patentable over the cited references. Accordingly, withdrawal of the rejection of claims 1, 3, 5-11, 14-19 and 21-25 is hereby solicited.

In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants’ undersigned attorney to arrange for an interview to expedite the disposition of this case.

Application No. 10/647,247  
Art Unit: 1795

Amendment under 37 C.F.R. §1.111  
Attorney Docket No. 031029

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,  
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